

WHAT IS CLAIMED IS:

1. An energy delivery device for use with a medical treatment system, wherein the energy delivery device comprises:

5 An optical fiber;

A memory device, said memory device having data programmed therein, said data being specifically associated with the energy self-absorption properties of said optical fiber;

Wherein said optical fiber and said memory device are operatively connected to the medical treatment system during use of said medical treatment system.

10 2. An energy delivery device according to claim 1, wherein said data includes a calibration parameter.

3. An energy delivery device according to claim 2, wherein said calibration parameter is indicative of a self-heating characteristic of said optical fiber.

4. An energy delivery device according to claim 3, wherein said self-heating characteristic
15 is associated with a power level.

5. An energy delivery device according to claim 3, wherein said self-heating characteristic is a function of a power level.

6. An energy delivery device according to claim 5, wherein said function is modeled by an equation.

20 7. An energy delivery device according to claim 6, wherein said equation is a linear equation.

8. An energy delivery device according to claim 3, further comprising a connector wherein said optical fiber and said memory device are attached to said connector.

9. An energy delivery device according to claim 8, wherein said optical fiber has a proximal
25 end and a distal end, said distal end comprising a penetrating tip.

10. An energy delivery device according to claim 9, wherein said optical fiber further comprises a light-diffusing section located adjacent said distal end.

11. An energy delivery device according to claim 10, further comprising a temperature sensor adjacent said light-diffusing section.

30 12. An energy delivery device according to claim 11, wherein said temperature sensor includes alexandrite particles.

13. A memory device for use with an energy delivery device in combination with an optical fiber, wherein said memory device comprises:

An electronic erasable programmable read-only memory chip residing on a printed circuit board, said electronic erasable programmable read-only memory chip having data programmed
5 therein, said data including a calibration parameter that is specifically associated with the energy self-absorption properties of said optical fiber.

14. A memory device according to claim 13, wherein said calibration parameter is indicative of a self-heating characteristic of said optical fiber.

15. A method of producing an energy delivery device for the treatment of human tissue
10 wherein the energy delivery device includes a memory device, said method comprising the steps of:

(i) measuring at least one self-heating characteristic;

(ii) determining one or more calibration parameter indicative of said self-heating
characteristic; and

15 (iii) storing said calibration parameter in said memory device.

16. A method of producing an energy delivery device for the treatment of human tissue
according to claim 15, further comprising the steps of:

(i) reading said calibration parameter from said memory device;

(ii) setting a power level for the energy delivery device;

20 (iii) reading a measured temperature;

(iv) calculating a corrected temperature value using said calibration parameter and said
measured temperature; and

(v) adjusting said power level in response to said corrected temperature value.

17. A method of producing an energy delivery device for the treatment of human tissue
25 according to claim 15, further comprising an optical fiber and wherein said self-heating characteristic is associated with said optical fiber.

18. A method of producing an energy delivery device for the treatment of human tissue
according to claim 17, wherein said optical fiber has a distal end, and further comprising the
steps of:

30 (i) reading said calibration parameter from said memory device;

(ii) setting a power level for the energy delivery device;

(iii) reading a measured temperature taken at said distal end of the optical fiber;

(iv) calculating a corrected temperature value using said calibration parameter and said measured temperature; and

(v) adjusting said power level in response to said corrected temperature value.

5 19. A method of producing an energy delivery device for the treatment of human tissue according to claim 17, wherein said calibration parameter is derived from the self-heating characteristic of said optical fiber.

20. A method of producing an energy delivery device for the treatment of human tissue according to claim 17, wherein said self-heating characteristic results from the energy self-
10 absorption properties of said optical fiber.

21. A method of producing an energy delivery device for the treatment of human tissue wherein the energy delivery device includes a memory device, said method comprising the steps of:

(i) measuring at least one self-heating characteristic;

15 (ii) determining one or more calibration parameter indicative of said self-heating characteristic;

(iii) storing said calibration parameter in said memory device;

(iv) reading said calibration parameter from said memory device;

(v) setting a power level for the energy delivery device;

20 (vi) reading a measured temperature;

(vii) calculating a corrected temperature value using said calibration parameter and said measured temperature; and

(viii) adjusting said power level in response to said corrected temperature value.

25